

Palliative long-term abdominal drains in refractory ascites due to end-stage liver disease: a case series

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MeSH headings/keywords

End Stage Liver Disease

Liver Cirrhosis

Ascites

Paracentesis

Palliative Care

End of Life Care

What is already known about the topic

- Long term abdominal drains (LTAD) are an accepted palliative strategy in malignant ascites, but have not been routinely used nor subject to research in end stage liver disease (ESLD).
- Historically, placing LTAD in ESLD for refractory ascites (RA) has been assumed to be contraindicated due to concerns regarding infection, acceptability and tolerability.
- There is limited case series data published on LTAD in an ESLD cohort.

What this paper adds

- Provides preliminary evidence of the safety and effectiveness of palliative Rocket LTAD as a novel approach to the palliative management of RA in patients with ESLD.
- Reports the use of prophylactic antibiotics in this setting.

Implications for practice, theory or policy

- When used as part of a multidisciplinary approach, LTAD may be a safe and effective palliative intervention in this cohort.

Abstract

Background

Ascites, the commonest complication of cirrhosis, leads to frequent hospitalisations.

Refractory ascites (RA) confers a median survival of 6 months without liver transplantation (LT). In many the management remains palliative (large volume paracentesis, LVP). Despite calls for improvement, Palliative and End of Life (EoLC) is

not yet integrated into end stage liver disease (ESLD). Long-term abdominal drains (LTAD) are a palliative strategy in malignant ascites, but not ESLD.

Case presentation

A retrospective, single centre, case series review was performed of patients undergoing LTAD placement for RA secondary to ESLD at a large teaching hospital between August 2011 and March 2013.

Case management

Patients with ESLD and RA, where LT was not an option, were considered for LTAD. Seven patients underwent successful LTAD insertion after multi-professional assessment.

Case outcome

Following LTAD, mean hospital attendances reduced to 1 (0-4) from 9 (4-21); with none for ascites management. Median survival after LTAD insertion was 29 days (8-219). The complication rate was low and none life-threatening.

Conclusions

Palliative and EoLC needs in ESLD remain under-addressed. Our data suggests LTAD may be a safe and effective palliative intervention in ESLD. Prospective randomised controlled trials comparing LVP versus LTAD in RA in ESLD are warranted.

Introduction

Ascites is the most the common complication of cirrhosis, seen in approximately 90% of individuals with end stage liver disease (ESLD) (1). It results in frequent, repeated hospitalisations due to symptoms such as pain and breathlessness. Unresponsiveness to, or intolerance of, diuretics [refractory ascites, (RA)] is a poor prognostic sign in ESLD; without liver transplantation (LT) median life expectancy is six months (2, 3). We and others have shown less than ten percent of patients with advanced cirrhosis are eligible for LT due to comorbidity, alcohol recidivism, substance misuse and psychosocial issues (1, 4). Thus in many with RA and ESLD the management remains palliative.

The commonest palliative intervention for RA is frequent large volume paracentesis (LVP), on average every 10-14 days (2). To ensure amenability for drainage, patients wait until their ascites is tense, with consequent increased symptom severity (5). RA is therefore an important determinant of reduced quality of life (QoL) in ESLD (6).

Individuals with RA often have contraindications for other interventions such as transjugular intrahepatic portosystemic shunts (TIPSS) and the ALFA pump (7, 8, 9). Additionally these are invasive techniques, thus making them less suitable as palliative interventions.

Long-term abdominal drains (LTAD) are small bore flexible drains tunnelled subcutaneously on the abdominal wall, under local anaesthetic, with ultrasound guidance (10). Community nurses or if willing, patients/carers, drain the ascites at home dependent on symptoms (e.g. 1-2 Litres, 2-3 times per week). LTAD are an accepted palliative strategy in malignant ascites, though to date have not been researched in ESLD.

In the UK, deaths from chronic liver disease have increased 400% since 1970, in sharp contrast to other chronic conditions (11). In 2009 over 70% with ESLD died in hospital compared to 55% of total deaths (12). There are national calls to improve the overall end of life care (EoLC) in ESLD (13). Here we report our early experience with palliative LTAD in individuals with RA due to ESLD.

Methods

A retrospective, single centre, case review was performed of patients who underwent LTAD placement for RA secondary to ESLD at Brighton and Sussex University Hospital NHS Trust (BSUH) between August 2011 and March 2013.

This cohort were not LT candidates due to either comorbidity, alcohol recidivism, substance misuse and or psychosocial factors; often in combination. Suitability for LTAD was assessed by a multi-disciplinary group including Hepatologists and Palliative Medicine physicians. Prior spontaneous bacterial peritonitis (SBP) did not automatically contraindicate LTAD insertion. LTAD was discussed with patients and family (if present) and all patients gave written consent prior to insertion.

Two LTADs were available in England at the time: PleurX® (UK Medical Ltd, Basingstoke, UK) and Rocket Medical (Watford, UK). Rocket Medical LTAD were utilised due to experience amongst clinicians siting the LTAD and community nursing teams providing ongoing support.

LTADs were inserted under ultrasound guidance by JM and MA as per manufacturer's instructions (10). Local hospital policy regarding use of blood/clotting products was followed, (platelet count $< 50 \times 10^9$ and or INR > 2), however, none were required. Data was collected retrospectively from patient records. Following review of preliminary

data from the first five cases, prophylactic norfloxacin/ciprofloxacin use post LTAD insertion was initiated. No patient had prior (SBP).

As of April 2016, all but one patient are deceased, hence obtaining consent for publication from next of kin was considered inappropriate; the surviving patient gave written consent.

Results

During the study period, eight patients were deemed appropriate for LTAD; seven underwent successful insertion, one dying soon after assessment. All patients had clinical, biochemical and radiological evidence of cirrhosis and LT was contraindicated due to either comorbidity and or alcohol recidivism (Table 1).

This was an elderly, predominantly female, cohort, median age at insertion 71 years (55-80); non-alcoholic fatty liver disease (NAFLD) being the dominant aetiology of ESLD (57%) (Table 1). Five (71%) had Child Pugh B and two Child Pugh C disease (29%). --- had had SBP prior to LTAD and how long prior to LTAD insertion. Were these on antibiotic prophylaxis All patients had at least one comorbidity, the commonest being diabetes mellitus (DM) (71%).

Of the seven cases, one remained on diuretics at the time of LTAD insertion. In the remaining six, diuretics had been stopped historically due to intolerance (hyponatraemia and or renal dysfunction).

In the six months prior to LTAD insertion the median number of LVP episodes was 7 (4-17). Following the intervention, GI related hospital attendance reduced from a median of 9 (4-21) to 1 (0-4), however none of these attendances were for management of ascites or LVP (Table 1).

Complications

Subsequent to LTAD insertion one patient developed drain site cellulitis, treated successfully with antibiotics. A second developed cellulitis requiring LTAD removal (drain duration 219 days), however, LTAD was reinstated at patient's request once cellulitis had resolved (see below); a third developed hepatic encephalopathy (HE), the cause unclear. Ascitic fluid culture obtained from the LTAD grew *Pseudomonas aeruginosa* and *Corynebacterium striatum*, therefore must be interpreted with caution. There was no improvement with empirical antibiotic treatment, the patient subsequently developed gastrointestinal bleeding and was managed palliatively with fast-track home for EoLC.

Median survival following LTAD insertion was 29 days (8-219). Six patients died during follow up, mortality being liver related in all. The place of death in four cases was recorded as in hospital, one in their own home and one in a care home. The single surviving patient had a second LTAD sited, at their request, after removal of the first due to cellulitis (see above). The second LTAD remains in situ (436 days at last follow up).

Discussion

This is a single centre experience of palliative Rocket Medical LTAD in RA due to ESLD. Despite the small sample size, our data suggest that, when used as part of a multidisciplinary approach, LTAD may be a safe and effective palliative intervention in this cohort. Technical success was 100% with no further LVP requirement. Median survival following LTAD insertion was 29 days, however, patients were referred late in their disease trajectory having already undergone multiple LVPs; resulting in less scope for intervention earlier on a palliative pathway. Complications observed with LTAD were not life-threatening and in none did the LTAD conclusively and directly contribute to death; this being liver related in all.

Patients with ESLD have complex and challenging medical needs related to a fluctuating disease trajectory (severe near fatal exacerbations or decompensations), ongoing alcohol use, mental health issues and social isolation/stigmatisation. Additional factors include younger age (90% of patients are < 70 years and 1:10 are < 40 years), hence may not have engaged with health services (12). Finally is the consistent lack of public, as well as healthcare professional, awareness that ESLD is a life limiting condition (12).

LTAD are an accepted palliative strategy in malignant ascites. A NICE technology appraisal (review of nine studies, 180 patients, all using PleurX® drains) lend credence to LTAD within this setting with low complication rates (device related infections 5.8%), 100% technical success and improved symptom control (14). Traditionally, use of LTAD in ESLD has been hampered by concerns regarding infection, acceptability and tolerability. This is despite the potential advantages (avoidance of frequent hospitalisations, some LVP associated complications, spending the majority of remaining life at home, improved QoL and possible economic benefits).

There is thus limited published data on LTAD in an ESLD cohort with only small case series (total 66 patients) (15, 16, 17, 18) all using PleurX® drains. Catheter related infections were low (7/66, all being bacterial peritonitis) with LTAD remaining in situ

for up to four months. However prophylactic antibiotics were only used in one study (15). In another case series of 46 patients, (nine with portal hypertension), Semadeni et al reported 98% technical success rate, 9% bacterial peritonitis, with a mean catheter (PleurX®) and patient survival of 65 and 91 days respectively; the best survival seen in those with portal hypertension (111 and 192 days respectively) (19).

Since this was an EoL cohort our main emphasis was on improving QoL. Therefore those with prior SBP were not automatically excluded from LTAD insertion. The reasons why we did not conclusively observe SBP post LTAD insertion are unclear but could include the small sample size and short follow up. Additionally, earlier studies in malignant ascites have shown that risk of peritonitis is significantly lower with tunnelled vs. non tunnelled drains (4.4% vs 34.2%) (Fleming et al, ref at the end of manuscript). Nonetheless we are cognisant of the potential for SBP in ESLD and hence introduced antibiotic prophylaxis after the first five patients.

Encouraged by this and our own data, our group has obtained National Institute for Health Research (NIHR) funding for a prospective feasibility randomised controlled trial comparing palliative Rocket LTAD versus LVP in ESLD (REDUCe Study, ISRCTN 30697116). Embedded are assessments of whether an ESLD cohort can be managed

outside of secondary care, a concurrent qualitative study and QoL and health economics assessment.

In conclusion, we provide preliminary evidence of the safety and effectiveness of palliative Rocket LTAD in the management of patients with RA due to ESLD. EoLC in ESLD remains an unmet need and will mandate a paradigm shift in attitudes and practice both amongst healthcare professionals and wider society.

References

1. Potts, JR, Goubet, S, Heneghan, MA, Verma S. Determinants of long-term outcome in severe alcoholic hepatitis. *Aliment Pharmacol Ther* 2013; 38: 584–595.
2. EASL. Clinical practice guidelines on the management of ascites, spontaneous bacterial peritonitis, and hepatorenal syndrome in cirrhosis. *J Hepatol* 2010; 53:397–417.

3. Guardiola J, Baliellas C, Xiol X, Fernandez Esparrach G, Ginès P, Ventura P, Vazquez S. External validation of a prognostic model for predicting survival of cirrhotic patients with refractory ascites. *Am J Gastroenterol* 2002; 97:2374–2378.
4. Veldt BJ, Lainé F, Guillygomarc'h A, Lauvin L, Boudjema K, Messner M et al. Indication of liver transplantation in severe alcoholic liver cirrhosis: quantitative evaluation and optimal timing. *J Hepatol* 2002; 36:93-98.
5. Keen A, Fitzgerald D, Bryant A, Dickinson HO. Management of drainage for malignant ascites in gynaecological cancer. *Cochrane Database Syst Rev* 2010; 1:CD007794.
6. Marchesini G, Bianchi G, Amodio P, Salerno F, Merli M, Panella C et al. Italian Study Group for quality of life in cirrhosis. Factors associated with poor health-related quality of life of patients with cirrhosis. *Gastroenterol* 2001; 120:170-8.
7. Chen RP, Zhu Ge XJ, Huang ZM, Ye XH, Hu CY, Lu GR et al. Prophylactic use of transjugular intrahepatic portosystemic shunt aids in the treatment of refractory ascites: metaregression and trial sequential meta-analysis. *J Clin Gastroenterol* 2014; 48:290–299.
8. Nair S, Robinson E, Fiona S, Macdonald S, Mergental H, Talbot D et al. Alfa pump for the treatment of refractory ascites: a “real world” experience from the UK. *Gut* 2015; 64: Suppl 1 A274-A275.
9. Bellot P, Welker MW, Soriano G, von Schaewen M, Appenrodt B, Wiest R et al. Automated low flow pump system for the treatment of refractory ascites: a multi-center safety and efficacy study. *J Hepatol* 2013; 58:922-7.
10. Rocket Medical. Indwelling Peritoneal Catheter (IPC) Insertion Kit R54400-16-40 (ZDOCK249 IFU). Rocket Medical PLC 2013.

11. Williams R, Aspinall R, Bellis M, Camps-Walsh G, Cramp M, Dhawan A et al. Addressing liver disease in the UK: a blueprint for attaining excellence in health care and reducing premature mortality from lifestyle issues of excess consumption of alcohol, obesity, and viral hepatitis. *Lancet*. 2014; 384:1953–1997.
12. National end of life care intelligence network. Deaths from Liver Disease: Implications for end of life care in England. March 2012. (Accessed at http://www.endoflifecare-intelligence.org.uk/resources/publications/deaths_from_liver_disease).
13. Elizabeth Kendrick, GPwSI Older people and Chair End of Life Clinical Innovation Team, NHS North East. Getting it Right: improving end of life care for people living with liver disease. February 2013. (Accessed at <http://www.yhln.org.uk/data/documents/2013/NHS%20Liver%20Care,%20Getting%20it%20Right%20%20Improving%20End%20of%20Life%20Care%20for%20People%20with%20Liver%20Disease.pdf>).
14. White J, Carolan-Rees G. PleurX peritoneal catheter drainage system for vacuum-assisted drainage of treatment-resistant, recurrent malignant ascites: a NICE Medical Technology Guidance. *Appl Health Econ Health Policy* 2012; 10:299-308.
15. Kriesse S, Spence-Adams S, Al-Khadimi G, Suddle AR, Agarwal KA, Peddu P. Palliative Management of Symptomatic Refractory Ascites Secondary to Liver Cirrhosis with Tunnelled Peritoneal Drainage Catheters. A Report of Preliminary Experience. In: EAPC 2013. 13th World Congress of the European Association for Palliative Care, Prague, Czech Republic 30 May – 2 June 2013, poster number P1-395. Prague: EPAC.
16. Kundu S, Bettmann M. The Safety and Efficacy of Tunneled, Indwelling Peritoneal Catheter Drainage for Refractory, Non-Malignant Ascites. *Am J Gastroenterol Suppl* 2012; 107:S1-S880.

Fleming ND, Alvarez-Secord A, Von Gruenigen V, Miller MJ, Abernethy AP. Indwelling catheters for the management of refractory malignant ascites: A systematic literature overview and retrospective chart review. *Journal of Pain and Symptom Management*. 2009;38:341-349

17. Imler T, Abd El-Jawad K, Kwo P, Vuppalanchi R, Chalasani N. To Drain or Not Drain: PleurX Indwelling Drainage Catheters for Non-Malignant Refractory Ascites or Hepatic Hydrothorax. *Am J Gastroenterol Suppl* 2012; 107:S145.
18. Siederdisen CHZ et al. Home-based Management of Refractory Ascites by Permanent Tunneled Peritoneal Catheter is an Effective Replacement for Recurrent Large Volume Paracentesis. EASL 2016. The International Liver Congress, Barcelona, Spain 13 - 17 April 2016, Poster SAT-006: Barcelona EASL.
19. Semadeni GM, Gubler C, Nagy A, Manser C, Borovicka J, Semela D. Placement of a Permanent, Tunnelled Peritoneal Drainage Catheter (PleurX) for Refractory Malignant and Portal-hypertensive Ascites in a Multicentre Study. *J Hepatol Suppl* 2015; 62:S381.

Table 1. Demographic, clinical and hospital attendance data. Data are presented as median and range.

Age (years)	71 (55-80)	
Gender		
	Female	4 (57%)
	Male	3 (43%)
Aetiology		
	NAFLD	3 (43%)
	ARLD	2 (29%)
	Cryptogenic	1 (14%)
	NAFLD/ARLD	1 (14%)
Co-morbidities		
	Diabetes	5 (71%)
	IHD	4 (57%)
	CKD	3 (43%)
	Others*	
Laboratory results (reference ranges)	Median (range)	
Sodium (136-145 mmol/L)	131 (119-142)	
Creatinine (62-106 umol/L)	134 (125-188)	
eGFR (>60 mL/min)	33 (32-43)	
Albumin (35-52 g/L)	32 (22-43)	
Bilirubin (0-21 umol/L)	19 (7-32)	
INR (0.8-1.2)	1.3 (1.2-1.6)	

ALT (0-41 iu/L)	16 (12-73)	
ALP (40-129 iu/L)	139 (80-251)	
Child Pugh Score	9 (7-11)	
Model for End Stage Liver Disease (MELD) score	16 (12-18)	
UK End Stage Liver Disease (UKELD) score	55 (46-64)	
	Six months prior to LTAD insertion	Following LTAD insertion
Hepatology related hospital attendances	9 (4-21)	1 (0-4) (all cause hospital attendance)
Hepatology related outpatient clinic attendances	2 (0-3)	0
Hepatology related inpatient admissions	5 (1-11)	1.5 (0-4)
Day case large volume paracentesis attendances	2 (1-7)	0
Large volume paracentesis episodes (both inpatient and day case)	7 (4-17)	0

*others = Chronic obstructive pulmonary disease, hypertension, stroke, congestive cardiac failure, peripheral vascular disease, atrial fibrillation, previous bowel cancer.

